AMENDMENTS TO THE DRAWINGS:

The attached replacement sheet of drawings includes changes to Fig. 1. Specifically, all of the labeled blocks now include textual labels in addition to numerical labels, in keeping with the outstanding requirement pertaining thereto.

REMARKS

Reconsideration and withdrawal of the outstanding objections/rejections, in consideration of the present amendment, is respectfully requested.

The specification was revised to correct informalities therein as well as to improve the readability therein. Due to the extensiveness of the revisions implemented therein, Applicants, through their undersigned representative, are submitting herewith (as Attachment A) a substitute specification directed thereto. It is submitted, new matter is not being added with regard to the substitute specification, either by addition and/or deletion. Also, since the accompanying substitute specification is a voluntary submission by Applicants, enclosed herewith (as Attachment B) is a copy of a marked-up version of the original specification showing the changes being implemented therein. Acceptance therefor of the substitute specification as a replacement of the originally filed specification is respectfully requested.

Attached hereto, also, is a replacement drawing sheet, directed to Fig. 1 of the drawings. The textual inserts effected in the individual blocks of Fig. 1 are in keeping with the requirements made in the outstanding Office Action. Acceptance/formal entry therefor of the replacement sheet of Fig. 1 of the drawings is respectfully requested.

The Abstract of the application was also revised in keeping with the outstanding requirement directed thereto. Acceptance therefor of the new (substitute) Abstract is respectfully requested.

By the above-made amendments, claims 1-15 remain pending of which claims 1-10 were amended. Amendments were made to the claims for effecting further clarification of the subject matter intended to be covered including to highlight

the particularities of Applicants' invention over that previously known including over the art documents as cited in the outstanding rejections.

With regard to the amendments made to the claims, also, revisions were implemented therein to correct the informalities noted under items 5, 6 and 7, on page 4 of the Office Action. In view of the corrective revisions made to claims 5 and 7, the previously outstanding objections thereto, it is submitted, have been rendered moot. Other revisions were also implemented in the claims that are, basically, of an editorially clarifying nature including also grammatical revisions. As to the dependent claims, expressions such as "characterized in that" were substituted with the more readily used expression "wherein," according to U.S. practice.

In base claim 1, amendments were implemented therein to further define the "method." Namely, the invention therein highlights the corrective action made to the DC offset in terms of the adjustments made to the estimated DC offset, consistent with that effected with regard to the example embodiments shown in Figs. 2-3 in conjunction with the waveforms in Figs. 4-5 of the drawings, as examples thereof (although not limited thereto).

Incidentally, Applicants note with appreciation the indication that claims 7-15 would be formally allowed upon obviating the outstanding objection to base claim 7 thereof. As noted above, appropriate corrective action was effected with regard to the matters raised under matters 6 and 7 on page 4 of the Office Action, thereby obviating the outstanding objections to base claim 7. However, in connection with the further detailed review of the claimed subject matter, Applicants, through their undersigned representative, have implemented additional revisions to independent claim 7 for purposes of effecting further clarification of the subject matter claimed. For example, the expressions "a signal," "said signal" and "phase shifted signal" were amended to a first signal, said first signal and a phase shifted second signal,

respectively, thereby to more clearly distinguish one from the other. With regard to the example embodiment, Signal 1 and Signal 2 relate to the now claimed "first signal" and "phase shifted second signal," respectively. Additionally, the sub-paragraph "means for adjusting said estimated DC offset..." was revised so as to avoid any question of proper antecedent basis regarding the expression "said estimated DC offset" therein. In connection with this, the referred to sub-paragraph now reads as "means for providing an estimated DC offset, wherein said estimated DC offset is adjusted if said phase shifted second signal is connected to an input of said means and said estimated DC offset is held constant if said phase shifted second signal is disconnected from the input of said means." As is clearly apparent, the original substantive intent of this paragraph remains, but, however, with some clarification pertaining thereto. As is noted with regard to dependent claim 9, the set forth "means for providing said estimated DC offset," may be a low-pass filter, an example of which can be seen with regard to LPF2 in Figs. 2 and 3, in which the stored DC offset across the low pass capacitor C is adjusted in accordance with the switching action of switch SW.

With regard to dependent claim 10, also, the revisions implemented therein, it is submitted, are of an editorial formatting nature, clearly not altering the intent of the previously set forth language. The substance of dependent claim 10 relates to the decision circuit, e.g., DEC, such as shown in Figs. 2-3.

It is submitted, since the previously outstanding objections were obviated in view of the above made amendments, and since the additional revisions implemented to the previously objected to claims 7-15 are, generally, of an editorially correcting/clarifying nature, acceptance of the same as well as reaffirmation of the allowability of these claims is respectfully requested.

Claims 1-3 and 5-6 stand rejected under 35 USC §102(e) as anticipated by Brown et al. (U.S. Patent 6,366,622); and claim 4 stands rejected under 35 USC §103(a) over the combination of Brown et al. ('622) in view of McNulty. As will be shown hereinbelow, the invention according to independent claim 1 and further according to the corresponding dependent claims thereof was neither disclosed or suggested by Brown et al., or, for that matter, even over the combined teachings of Brown et al., and McNulty, such as applied in the rejections. Therefore, insofar as presently applicable, these rejections are traversed and reconsideration and withdrawal of the same is respectfully requested.

In accordance with claim 1, the invention is a method for correcting the direct current offset portion (DC offset) of a first signal comprising the steps of: phase shifting the first signal for obtaining a second signal, comparing the first signal and the second signal with an estimated DC offset, and adjusting the estimated DC offset if the first signal and the second signal are found to be on different amplitude sides of the estimated DC offset, wherein the estimated DC offset is increased if the second signal is higher than the estimated DC offset and is decreased if the second signal is lower than the estimated DC offset. An example, although not limited thereto, is shown with regard to the DC offset correction circuit 106 in Fig. 1 of the drawings, an example detail thereof is shown in the form of the DC offset estimation circuit in Figs. 2-3 of the drawings, in which Signal 1 and Signal 2 relate to the claimed "first signal" and "second signal," respectively, and the decision circuit DEC, which contains comparators in DEC 1.1 and DEC 1.2, is for comparing the first signal and the second signal with the estimated DC offset.

In accordance with the scheme discussed in conjunction with the wave form illustrations in Figs. 4 and 5 of the drawings, which relate to the example embodiments in Fig. 2-3, the estimated DC offset at the output of the low pass filter

LPF2 is adjusted in accordance with the output of the decision circuit DEC. Specifically, the estimated DC offset becomes increased if the second signal (e.g., Signal 2) is higher than the estimated DC offset and becomes decreased if the second signal is lower than the estimated DC offset (e.g., see the discharging effect shown by D as well as the charging effect shown by C with regard to Figs. 4 and 5 of the drawings).

According to a further aspect of the invention, such as set forth in claim 2, the estimated DC offset is adjusted if the result of the comparison is such that the first and second signals are on different amplitude sides of the estimated DC offset. This can be seen from Figs. 4 and 5 of the drawings, for example, and the movement of switch SW moves from position B to position A which leads to an effective connection of the Signal 2 to the input of the low-pass filter in LPF2, which provides at an output thereof of the estimated DC offset. That is, as long as Signal 1 and Signal 2 are on the same amplitude side (i.e., both have amplitudes above or both have amplitudes below that of the estimated DC offset) switch SW remains in position B, in which the estimated DC offset is held constant. However, when the Signals 1 and 2 are on different sides (i.e., one has an amplitude higher than the DC est. while the other has an amplitude below that of the DC est.), the DC offset signal is adjusted since the switch SW is moved to position A such as shown in Fig. 2 of the drawings (see the discussion, for example, on page 7, beginning on line 8). The above described featured aspects discussed with regard to the example embodiments shown in Figs. 2-3 and 3-5 are particularly set forth with regard to claims 7-15, the subject matter of which was earlier deemed to be allowable.

Brown et al. ('662) disclosed a wireless communication scheme and, in particular, a wireless transceiver. Brown et al.'s disclosure features both an analog (coarse) DC-offset compensation scheme and fine digital DC-offset compensation.

On the other hand, the present invention calls for a scheme that operates in the analog domain. Therefore, insofar as the teachings of Brown et al., are concerned, only those portions thereof which relate to analogue (coarse) compensation such as in connection with Figs. 10 and 12 are, arguably applicable in terms of relevance of the present claimed subject matter. It is argued, insofar as claim 1 of the invention is concerned, that Brown et al., taught the featured aspect calling for "phase shifting the first signal for obtaining the second signal," using as a basis for this assumption phase shifter 220 in conjunction with mixer 216 such as shown in Fig. 10 thereof (see also Fig. 5 in Brown et al.). However, in Brown et al. ('622) phase shifter 220, it is observed, is used in conjunction with the VCO/PLL (phase lock loop) 208 with regard to producing the I and Q components in the multipliers 216, 218. The coarse DC offset cancellation circuits 352 and 354, in Brown et al., Fig. 10, for example, provide analog DC offset cancellation which is described with regard to Fig. 12 thereof (see column 18, line 52, to column 19, line 18). However, it is clearly apparent that the DC-offset scheme employed in Brown et al., is different from that according to the invention as set forth in claims 1+. As can be seen from Brown et al.'s Fig. 12 illustration of his DC offset compensation scheme, the set forth aspect of the present invention calling for phase shifting a first signal for obtaining a second signal is not featured nor, for that matter, inferred from Brown et al.'s teachings. Therefore, the invention according to claim 1, as well as with regard to the corresponding dependents claims thereof, could not have been anticipated or suggested from Brown et al.

The same arguments in favor of patentability are also applicable with regard to the dependent claims.

McNulty taught use of low pass filters and was applied in the rejection of claim 4 as, allegedly, teaching "phase shifting the first signal for obtaining the second

signal using a LPF." On the basis of the showings of low pass filters in McNulty, it is alleged that one of ordinary skill would have employed McNulty's teachings to modify Brown et al., to obtain "a second phase shifted signal from a first signal, using less hardware." Applicants, however, strongly disagree with this reasoning. It is not understood why one of ordinary skill would even have considered combining McNulty's "Audio" filters in Brown, et al.'s DC offset compensation scheme. In this regard, it is not evident why one of ordinary skill would have attempted to add a low pass filter let alone a low pass filter of the type taught by McNulty to effect phase shifting to the DC-offset compensation such as in Figs. 12 of Brown et al., when, in fact, there would be no apparent improvement in such modification. Applicants invention such as according to claims 1+ sets forth a method for correcting the DC offset which is completely different from that taught by Brown. As can be seen, for example, in Fig. 12 of Brown, the DC-offset compensation scheme employs the differential action of two separately inputted signals, in clear contradistinction with that called for in claim 1 as well as with regard to the corresponding dependent claims thereof. It is clearly apparent therefor the invention according to claim 4 is patentable even over the combined teachings of Brown et al., and McNulty.

At least for the same and similar reasons as that previously given by the Examiner, in conjunction with the further discussion presented hereinabove, claims 7-15 are also considered patentable.

The following discussion is in consideration of a review made by Applicants of the additional art documents which were cited as being of interest with regard to the last Office Action.

I. Lipscei (U.S. 6,459,602) disclosed a DC-DC converter with a load balancing mechanism for a two-or multi-phase power source. Insofar as the presently claimed subject matter is concerned, the featured

mechanism that can be said to most closely relate to a DC-offset compensation relating to the present invention is the current balancing block 301 in Lipscei. However, the input signals in block 301 are signals 134 and 136. It is noted that neither one or the other of these two signals is generated as a result of phase shifting action of the other. Further, the produced output of the block, it is submitted, is not generated to eliminate a DC-offset but, rather, to generate a DC-offset (in block 303), that is added to the generator signal from block 116 so as to generate signal 126(b).

II. Brown et al. (US 6,356,218) taught another method for eliminating a DC-offset. It is noted, however, that Brown et al., neither described or suggested the phase shifting of a signal for the purpose of obtaining the second signal.

III. Monticelli (US 4,459,699), it is submitted, likewise failed to teach the phase shifting of a signal for obtaining a second signal.

IV. Mohindra (US 6,148,047) disclosed eliminating the DC offset by adding a frequency offset to the local oscillator (as a DC offset after mixing down the signal corresponding to a frequency offset of the received signal). The received signal, is submitted, is not phase shifted either.

Therefore, in view of the amendments presented hereinabove together with these accompanying remarks, reconsideration and withdrawal of the outstanding objections/rejections as well as favorable action on the currently pending claims, i.e., claims 1-15, and an early formal notification of allowability of the above-identified application is respectfully requested.

Applicants request that any shortage or excess in fees in connection with the filing of this paper, including extension of time fees, and for which no other form of payment is offered, be charged or credited to Deposit Account No. 01-2135 (Case: 1123.41020X00).

Respectfully submitted,
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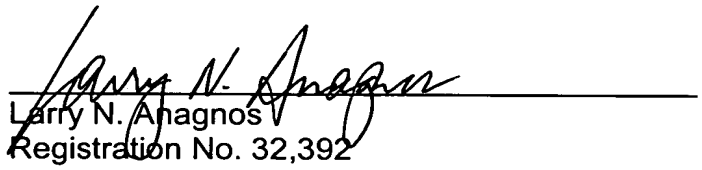

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APPENDIX